PIONEER

Service Manual

ORDER NO.
CRT-426-0

COMPONENT CAR STEREO STEREO MAIN AMP

GM-E04

EW, ES

SPECIFICATIONS

Power source ..... DC 14.4V (10.8~15.6V allowable)
Grounding system ..... Negative type
Max. current consumption 4A
Dimensions ..... 150(W)×25(H)×161(D)mm
Weight 1.0kg
Maximum power output ..... 25W + 25W
Continuous power output
..... 16W + 16W (1% dist. at 1kHz)
Load impedance ..... 4Ω (4~8Ω allowable)
Frequency response ..... 20~40,000Hz (±3 dB)
Signal-to-noise ratio ..... 90 dB (IEC-A network, at 1W)
Distortion ..... 0.015% (at 5W, 1kHz)
Input level 70mV/20kΩ

Note:
Specifications and the design are subject to possible modification without notice due to improvements.

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1. PARTS LOCATION

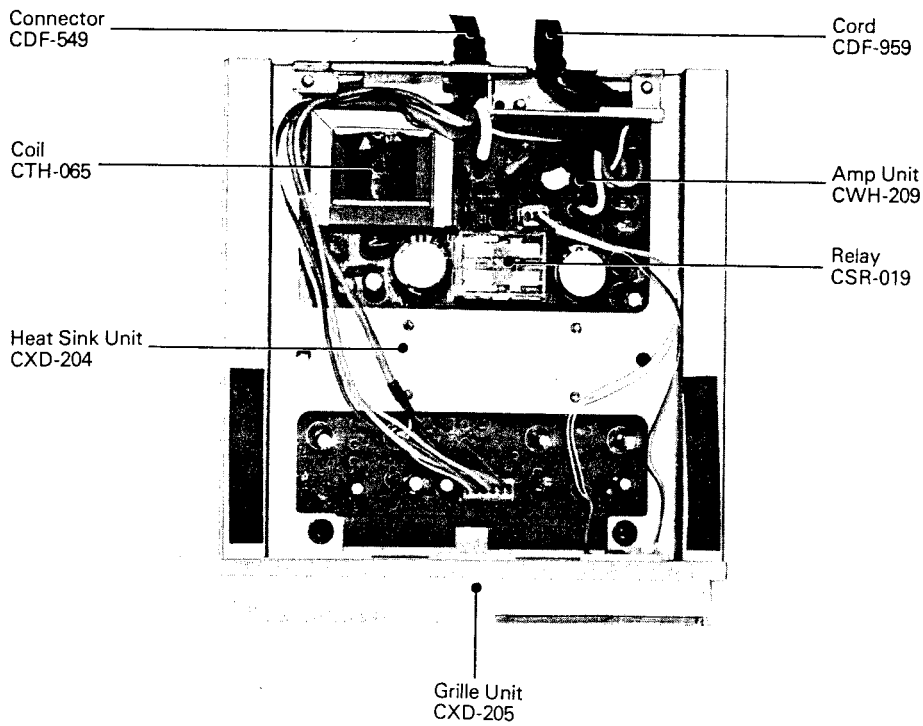


Fig. 1

QUESTIONNAIRE

MODEL _____

One Model per questionnaire

Dear Servicer,

Thank you for your cooperation in the post-sale service of Pioneer products.

This questionnaire is used as a tool to improve the serviceability of our products and service manuals. Please evaluate this model and service manual by answering the following questions. Your ideas may be realized in our future products. Your answers will be appreciated. Thank you.

PIONEER ELECTRONIC CORP.

T. Nakagawa, Manager, Service Section, International Division

1. SERVICING EVALUATION	Circle applicable number:	Good		Fair		Poor
a. Disassembly/Re-assembly:		1	2	3	*4	*5
b. Circuit Checks:		1	2	3	*4	*5
c. Replacement of Parts:		1	2	3	*4	*5
d. Adjustment (s):		1	2	3	*4	*5

* If (4) or (5) was circled, please be specific.

e. Your advice, opinion or ideas related to servicing this product.

2. SERVICE MANUAL EVALUATION

a. Circuit & Mechanism Description

b. Circuit Diagram

3. OTHER

Please describe other areas of servicing which you may find difficult.

Completed by : Date :

Company Name :

Address :

City/State/Zip :

Please send this form filled to the distributor in your country.

2. DISASSEMBLY

• How to Remove the Top Case

1. Remove the screw A, and the remove the Top Case.

• How to Remove the Bottom Case Unit

1. Remove the two screws B, and the remove the Bottom Case Unit

• How to Remove the Grille Unit

1. Remove the two screws C, and the remove the Grille Unit.

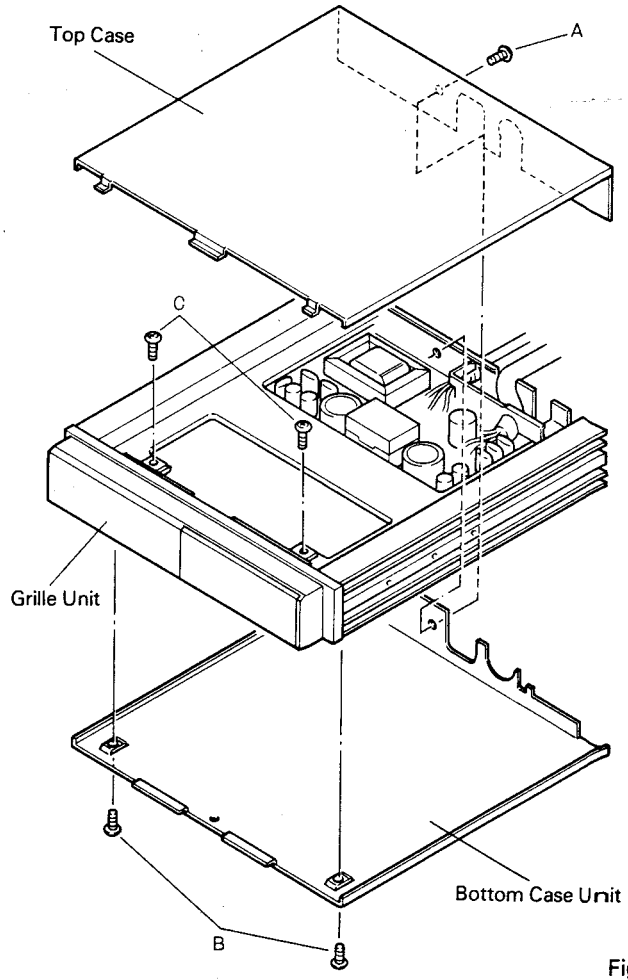


Fig. 2

3. CONNECTION

- Before making final connections, make temporary connections then operate the deck to check for any connecting cord problems.
- Speakers connected to this unit must be high power type with over 25W maximum input power and have impedance between 4 and 8 ohms. Be aware of the fact that using a speaker other than the one specified can cause the speaker to be damaged.
- A special BPTL circuit is used to be sure that you do not connect the speaker directly to ground nor join the left and right speaker (−) leads.
- Different speaker leads have are offered for different car models. The ground wire cannot be used for the left or right speakers lead. Be sure to use the speaker lead only.
- When connecting the cords, be sure to fix them firmly with clamps or tape. Be sure to protect the cords from damage by taping them at places where they will contact barriers.
- Keep the cord away from high temperature places such as the heater outlet.
- To assure that peripheral equipment connected to the main amp operate correctly, be sure to correctly connect the main power supply lead (red) as specified. If the connections are made incorrectly or forgotten, this unit will not work at all.
- If distance between the main amp and deck is too far to make proper connections, please buy the optional exclusive extension cord for the Component Car Stereo.

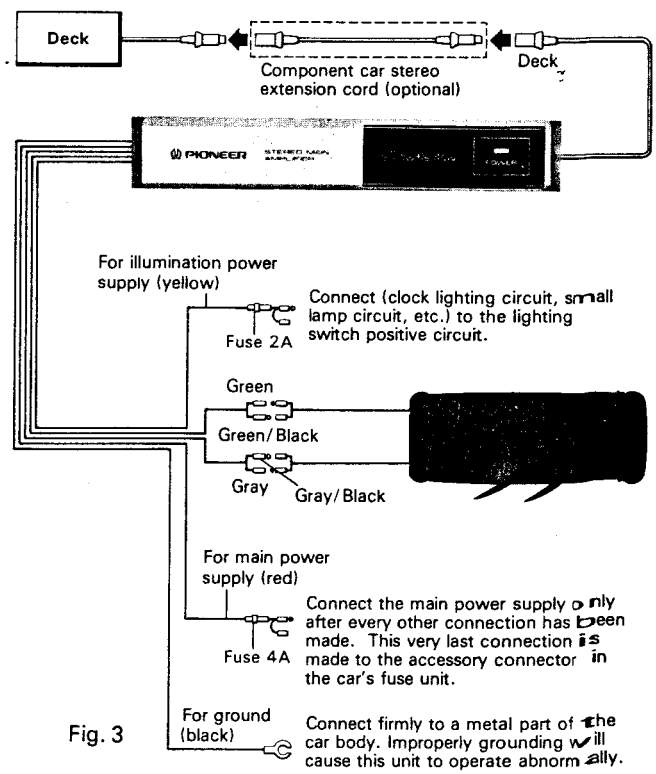

Deck
Component car stereo extension cord (optional)
Deck
PIONEER
For illumination power supply (yellow)
Fuse 2A
Connect (clock lighting circuit, small lamp circuit, etc.) to the lighting switch positive circuit.
Green
Green/Black
Gray
Gray/Black
For main power supply (red)
Fuse 4A
Connect the main power supply only after every other connection has been made. This very last connection is made to the accessory connector in the car's fuse unit.
For ground (black)
Connect firmly to a metal part of the car body. Improperly grounding will cause this unit to operate abnormally.

Fig. 3

4. CIRCUIT DESCRIPTION

4.1 BTL POWER IC

IC1,2:PA3011

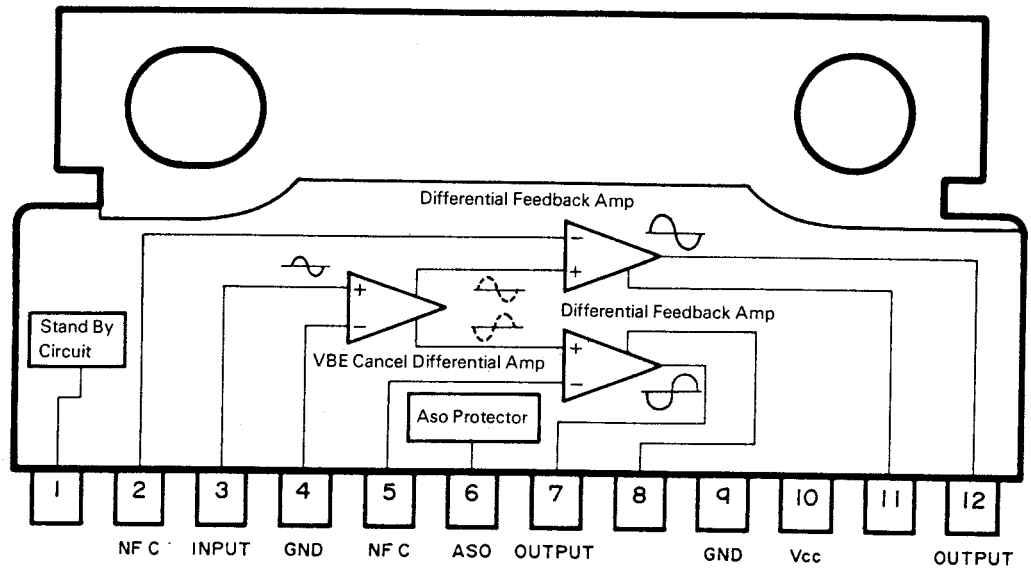


Fig. 4

PIN FUNCTIONS

Pin No.	Standard Voltage (V)	I/O	Functions
1	6.2V		Used with ripple filter and * stand by
2	1.1V	INPUT	Non-inversion amp differential (−) input
3	0V	INPUT	Input
4	0V		Input GND and substrate GND
5	1.1V	INPUT	Inversion amp differential (−) input
6	1.5V		Protector time constant decision condensor
7	7.3V	OUTPUT	Inversion output
8	13.9V		Inversion amp bootstrap condensor
9	0V		Output GND
10	14.3V		Vcc
11	13.9V		Non-inversion amp bootstrap condensor
12	7.3V	OUTPUT	Non-inversion output

* Pin No. 1 put into stand by mode by force 0V. (This time not used by GM-E04.)
In stand by mode the amp function is suspended and consumption current drops to 3 mA.
Threshold voltage of Pin No. 1 drops to about 5.6V.

4.2 Muting Operation

IC3:TA7349P

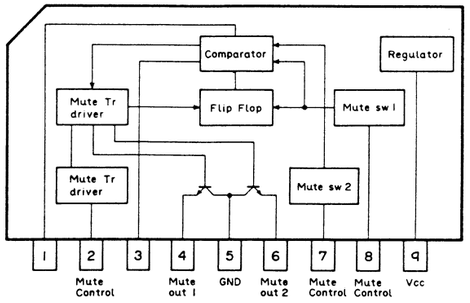
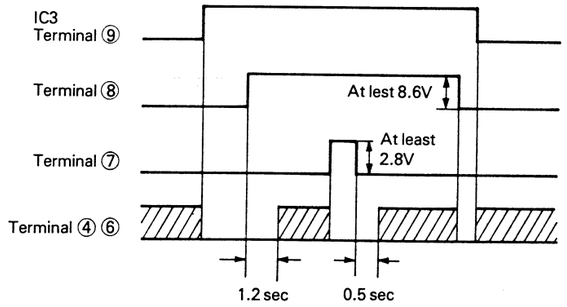


Fig. 5



(Timing of muting operation)

Fig. 6

- **Refer to figure 6 while reading the following description.**

1. When + B is supplied to the TO BATTERY terminal, a voltage is applied to terminal ⑨ of IC3, the muting transistor inside the IC is turned on and muting is activated.
2. When power is turned on to the external set, + B is supplied to pin ① of the connector. Muting is cancelled 1.2 seconds after the voltage at terminal ⑧ of IC3 reaches 8.6V or more.
3. When a muting output is generated in te external set, a voltage is applied from pin ④ of the connector to terminal ⑦ of IC3 and muting is activated when this voltage reaches 2.8V or more. Muting is cancelled 0.5 seconds after the voltage drops below 2.8V.
4. The muting restoration time is determined by the discharge time of the capacitor placed between terminals ① and ③ of IC3.

5. ELECTRICAL PARTS LIST

NOTE:

When ordering resistors, first convert resistance values into code form as shown in the following examples.

Ex. 1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5%, and K = 10%).

560Ω	*56 × 10¹*	*561*	*..... RD1/4PS 5 6 1 J*
47kΩ	*47 × 10³*	*473*	*..... RD1/4PS 4 7 3 J*
0.5Ω	*0R5*		*..... RN2H 0 R 5 K*
1Ω	*010*		*..... RS1P 0 1 0 K*

Ex. 2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62kΩ	*562 × 10¹*	*..... RN1/4SR 5 6 2 1 F*

- *For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.*
  ★★: GENERALLY MOVES FASTER THAN ★.
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- *Parts whose parts numbers are omitted are subject to being not supplied.*

Amp P.C. Board Unit

MISCELLANEOUS

Mark	Symbol & Description		Part No.
★★	IC1, IC2		PA3011
★★	IC3		TA7349P
★★	Q1		2SC2634NC
★	D1, D2		SM-1A-02LFD
★	ZNR		ERZ-M10DK220
	L1	Coil, 0.5 mH	CTH-065
	RL1	Relay	CSR-019

RESISTORS

Mark	Symbol & Description	Part No.
	R1 — R4, R10, R11	RD1/4VM□□□J
	R5 — R8	RN1P□□□KL
	R9	RD1/2PS□□□J

CAPACITORS

Mark	Symbol & Description		Part No.
	C1, C2		CSZAR47M35
	C3, C4		CKDYB221K50L
	C5, C6		CEA220M10L2
	C7 — C10		CEA101M10L2
	C11, C12		CEA330M10L2
	C13 — C16		CEA101M16L2
	C17 — C20, C23, C24		CQMA204K50L
	C21, C22	2200 μF/16V	CCH-058
	C25		CEA3R3M50L2
	C26, C27	2200 pF	CCG-081
	C28		CEA471M16L2

Miscellaneous Parts List

Mark	Symbol & Description		Part No.
	IL1/D1	Lamp/LED Unit (Lamp 14V, 40 mA)	CXD-206

6. SCHEMATIC CIRCUIT DIAGRAM

AMP P.C. BOARD UNIT

Connection is viewed from the direction of the arrow.

IC1,2 : PA3011
Power Amp

IC1

IC2

IC3 : TA7349P
Mute sw1
Mute sw2
Flip Flop
Comparator
Mute Tr driver
Mute Tr driver
Regulator
Muting

Relay
RL1 CSR-019

E (BLACK)
Lch (WHITE) ⑥
GND (BLACK) ⑤
Rch (RED) ①
MUTE (GREEN) ④
UN SWD +B (RED) ②
SWD +B (ORANGE) ③
ILLUMI +B (YELLOW)

8P INPUT DIN JACK FROM DECK/ EQ OUTPUT

L+ TO Lch SPEAKER(+) (GREEN)
L− TO Lch SPEAKER(−) (GREEN / BLACK)
G GND (BLACK)
R− TO Rch SPEAKER(−) (GRAY / BLACK)
R+ TO Rch SPEAKER(+) (GRAY)

ACC +B 14.4v (RED)
ILLUMI +B 14.4v (YELLOW)

LAMP/LED UNIT
D1
IL1 LAMP 14v 40mA
IL1/D1 : CXD−206

2SC2634NC
Trade mark
hFE
Type No.
Lot No
E C B

Q1 : 2SC2634NC−R
D1,2 : SM−1A−02LFD
ZNR : ERZ−M10DK220

fig_7

7. CONNECTION DIAGRAM

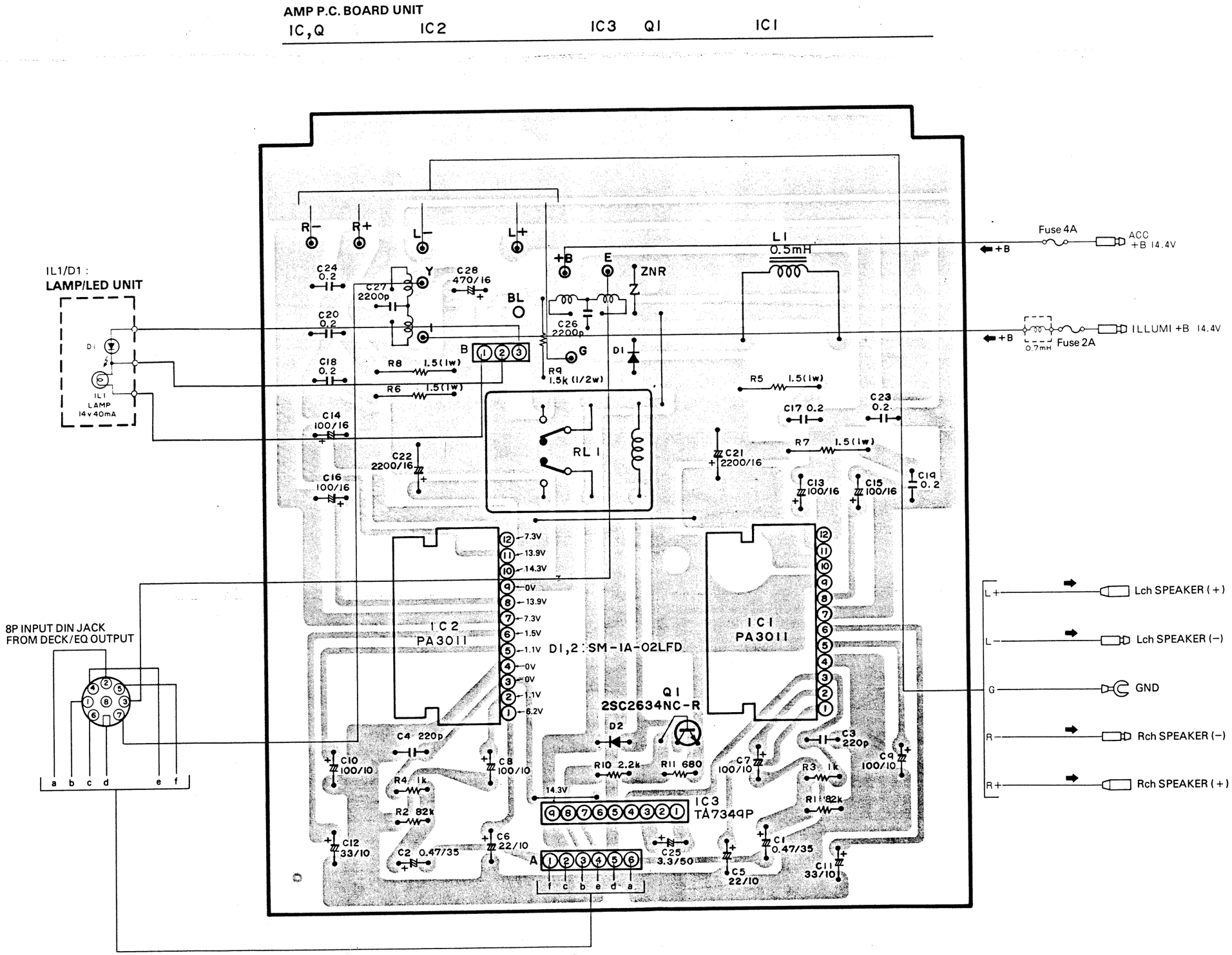


Fig. 8

8. EXPLODED VIEW

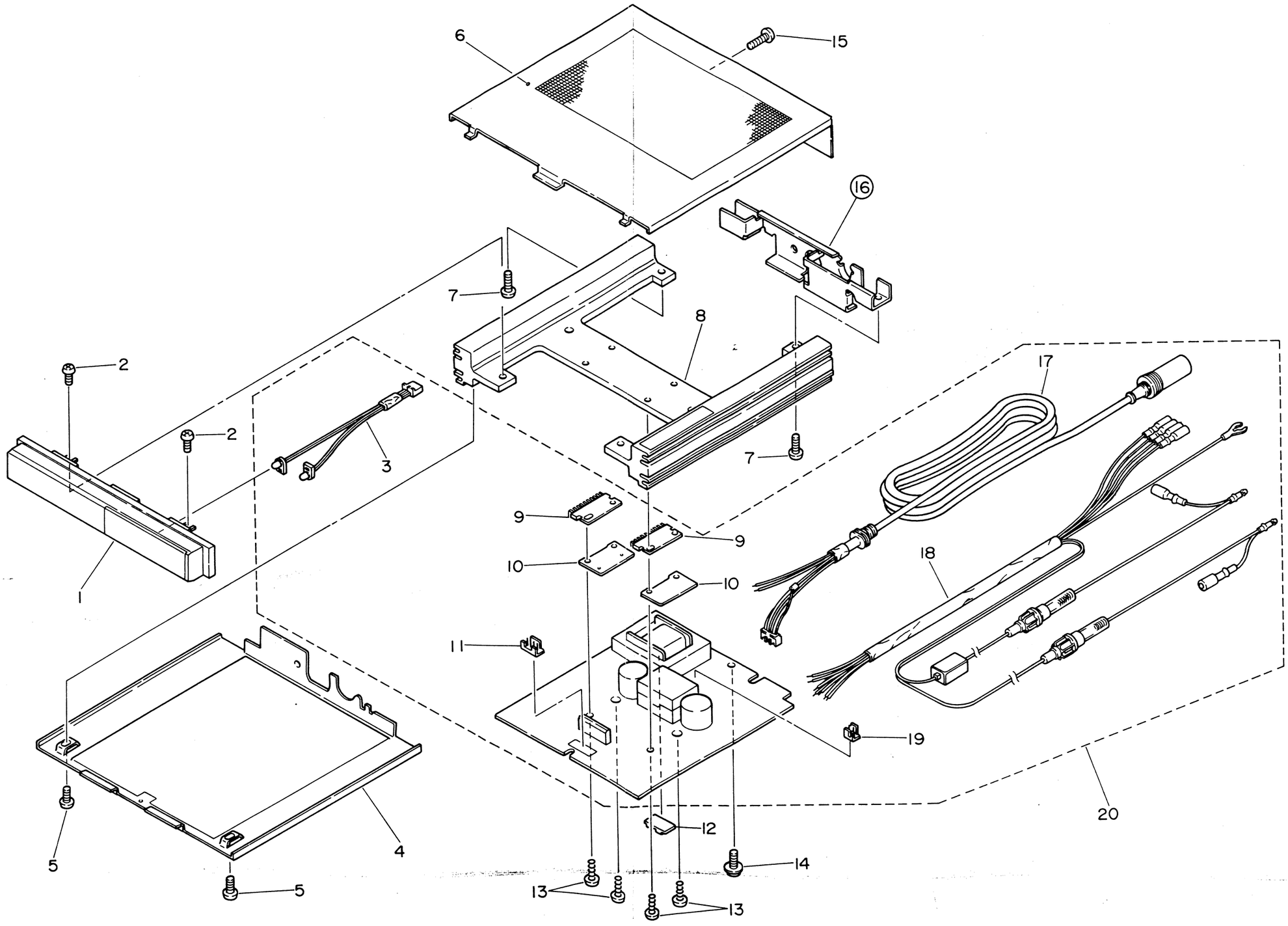


Fig. 9

9. PACKING METHOD

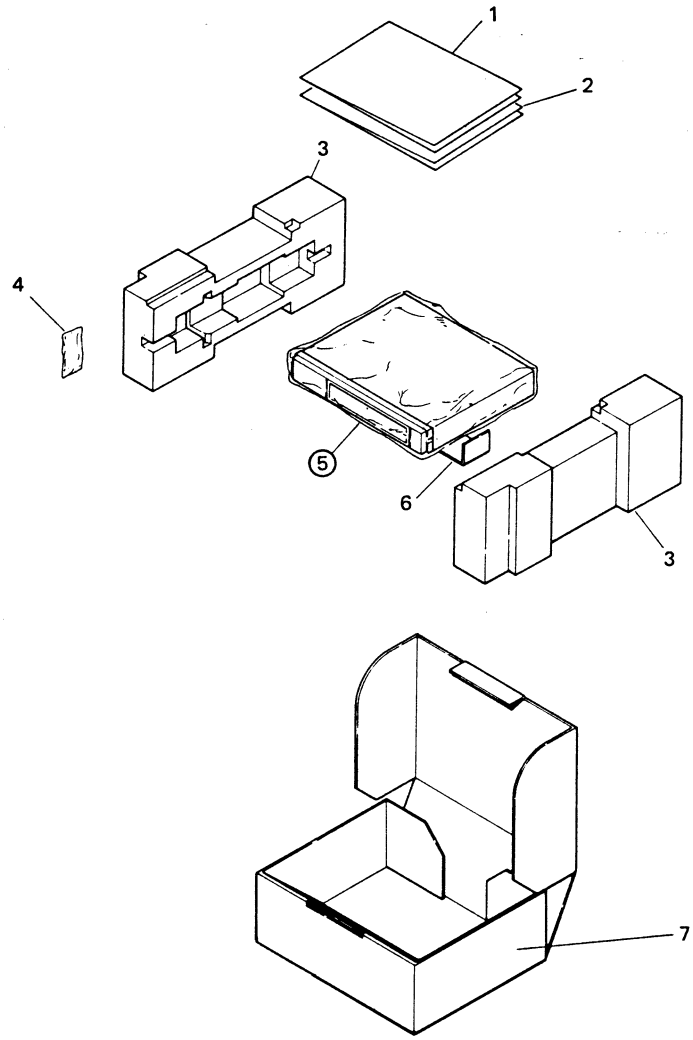


Fig. 10

• Parts List

NOTE:

- *Parts whose parts numbers are omitted are subject to being not supplied.*

Mark	No.	Part No.	Description
	1.	CRD-483	Owner's Manual (English, French, German, Spanish, Arabic)
	2.	CRD-484	Owner's Manual (GM-E04/EW) (Swedish, Norwegian, Dutch, Italian)
	3.	CHD-450	Styrofoam (1 set pair)
	4-1.	CNM-667	Fastener
	4-2.	CEA-748	Screw Assy
	4-2-1.	WA45F130M080	Washer
	4-2-2.	B20-223-F	Pin
	4-2-3.	B30-174-A	Screw (M5 × 16)
	4-2-4.	B70-056-A	Nut (M5)
	4-2-5.	CBA-102	Screw
	4-2-6.	HMF40P080FMC	Screw
	5.		Cover
	6.	CNB-783	Mounting Bracket
	7.	CHD-642	Carton (GM-E04/EW)
		CHD-644	Carton (GM-E04/ES)

• Parts List

NOTE:

- *For your Parts Stock Control, the fast moving items are indicated with the marks ★ ★ and ★.*
  ★ ★: GENERALLY MOVES FASTER THAN ★.
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- *Parts whose parts numbers are omitted are subject to being not supplied.*

Mark	No.	Part No.	Description
	1.	CXD-205	Grille Unit
	2.	BML30P080FMC	Screw
	3.	CXD-206	Lamp/LED Unit
	4.	CXC-191	Case Unit
	5.	PMZ30P060FMC	Screw
	6.	CNB-858	Case
	7.	BMZ30P080FMC	Screw
	8.	CXD-204	Heat Sink Unit
★★	9.	PA3011	IC
	10.	CNF-801	Spacer

Mark	No.	Part No.	Description
	11.	CKS-271	Plug (6P)
	12.	CNM-658	Spacer
	13.	BBZ30P120FMC	Screw
	14.	LMZ30P080FMC	Screw
	15.	CBA-100	Screw
	16.		Frame
	17.	CDF-549	Connector
	18.	CDF-959	Cord
	19.	CKS-268	Plug (3P)
	20.	CWH-209	Amp Unit